What is claimed is:

1. A system for deciding a bid item for which a bid is made, comprising:

a data memory for storing a logical formula representing a relationship among a plurality of bid items, a
5   value table containing a value of each of the bid items, price information of each of the bid items in at least one market, a total purchasing fund, and a bidding strategy;

a profit computation section for computing a profit obtainable when at least one bid item arbitrary selected from
10   the plurality of bid items is purchased, based on the value and the price information of the at least one bid item; and

a strategy computation section for determining at least one bid item for which a bid should be made and a gross profit obtainable from the determined at least one bid item,
15   wherein the strategy computation section selects a combination candidate from the plurality of bid items based on the relationship formula, instructs the profit computation section to compute a possible profit obtainable from the selected combination candidate, and determines the at least one bid item
20   so as to maximize the possible profit within the total purchasing fund.

2.   The system according to claim 1, wherein the logical formula represents a logical OR of the plurality of bid items, wherein the strategy computation section determines a subset of bid items from the plurality of bid items so as to maximize

5   the possible profit within the total purchasing fund.

3.   The system according to claim 1, wherein the logical formula represents a logical exclusive-OR of the plurality of bid items, wherein the strategy computation section determines a single bid item of the plurality of bid items so as to maximize

10   the possible profit within the total purchasing fund.

4.   The system according to claim 1, wherein

the logical formula represents a logical AND of the plurality of bid items, and

the value table further containing an added

15   combinatorial value which will be obtained only when the plurality of bid items are all purchased,

wherein the strategy computation section determines a list of bid items so as to maximize the possible profit within the total purchasing fund.

20   5.   The system according to claim 1, wherein the logical formula represents any combination of a logical OR, a logical exclusive-OR, and a logical AND of the plurality of bid items,

wherein

the logical OR represents a desire to maximize the possible profit within the total purchasing fund to obtain a subset of bid items from the plurality of bid items,

5   the logical exclusive-OR represents a desire to determine a single bid item of the plurality of bid items so as to maximize the possible profit within the total purchasing fund, and

the logical AND represents that a combinatorial value will be obtained only when a plurality of bid items related to the

10   logical AND are all purchased.

6.   The system according to claim 1, wherein the strategy computation section further establishes a bidding strategy taking into consideration a possible rise of a bidding price of each of the bid items due to participation of a third

15   party to the bidding in the future.

7.   An automated bidding system comprising:

a price collection device for automatically collecting price information of a bid item for which a bid is made in at least one market at regular intervals;

20   a bid decision system comprising:

a data memory for storing a logical formula representing a relationship among a plurality of bid items, a value table containing a value of each of the bid items, the price information

of each of the bid items, a total purchasing fund, and a bidding

strategy;

a profit computation section for computing a profit

obtainable when at least one bid item arbitrary selected from

5   the plurality of bid items is purchased, based on the value and

the price information of the at least one bid item; and

a strategy computation section for determining at least

one bid item for which a bid should be made and a gross profit

obtainable from the determined at least one bid item, wherein

10   the strategy computation section selects a combination

candidate from the plurality of bid items based on the

relationship formula, instructs the profit computation section

to compute a possible profit obtainable from the selected

combination candidate, and determines the at least one bid item

15   so as to maximize the possible profit within the total purchasing

fund; and

a bidding device performing a bid for the determined

at least one bid item.

8.   A bid supporting system comprising:

20   a market observation device for automatically

collecting price information of a bid item for which a bid is

made in at least one market at regular intervals;

a bid decision system comprising:

a data memory for storing a logical formula representing

a relationship among a plurality of bid items, a value table containing a value of each of the bid items, the price information of each of the bid items, a total purchasing fund, and a bidding strategy;

5   a profit computation section for computing a profit obtainable when at least one bid item arbitrary selected from the plurality of bid items is purchased, based on the value and the price information of the at least one bid item; and

          a strategy computation section for determining at least
10   one bid item for which a bid should be made and a gross profit obtainable from the determined at least one bid item, wherein the strategy computation section selects a combination candidate from the plurality of bid items based on the relationship formula, instructs the profit computation section
15   to compute a possible profit obtainable from the selected combination candidate, and determines the at least one bid item so as to maximize the possible profit within the total purchasing fund; and

          a bid recommendation device for representing the
20   determined at least one bid item as recommendable information reflecting price variations in the market.

          9.   The automated bidding system according to claim 7, wherein the relationship formula, the value table, and the total purchasing fund are allowed to be updated with a lapse of time.

10.   The bid supporting system according to claim 8,
wherein the relationship formula, the value table, and the total
purchasing fund are allowed to be updated with a lapse of time.

11.   The automated bidding system according to claim 7,
5   further comprising a mobile agent, wherein, after the
relationship formula, the value table, the total purchasing fund,
and the bidding strategy have been input, the automated bidding
system is transferred from a user's computer to a continuously
operating computer to allow periodical market observation.

10   12.   The bid supporting system according to claim 8,
further comprising a mobile agent, wherein, after the
relationship formula, the value table, the total purchasing fund,
and the bidding strategy have been input, the bid supporting
system is transferred from a user's computer to a continuously
15   operating computer to allow periodical market observation.

13.   A method for deciding a bid item for which a bid
is made, comprising the steps of:
a) storing a logical formula representing a
relationship among a plurality of bid items, a value table
20   containing a value of each of the bid items, price information
of each of the bid items in at least one market, a total purchasing

fund, and a bidding strategy; and

b) determining at least on bid item for which a bid should be made and a gross profit obtainable from the determined at least one bid item, so as to maximize a possible profit

5   obtainable from a combination candidate selected from the plurality of bid items based on the relationship formula within the total purchasing fund.

14.   The method according to claim 13, wherein the logical formula represents a logical OR of the plurality of bid

10   items,

the step (b) comprises the steps of:

b.1) producing a set G of bid items by removing a bid item whose present price exceeds a value thereof from the plurality of bid items;

15   b.2) determining whether a total of present prices of the bid items in the set G is not greater than the total purchasing fund;

b.3) when the total of present prices of the bid items in the set G is not greater than the total purchasing fund,

20   determining a best combination S of bid items in the set G under the bidding strategy to output a list of bid items in the set G and the possible profit obtained therefrom; and

b.4) when the total of present prices of the bid items in the set G is greater than the total purchasing fund,

computing a possible profit obtainable from a combination
candidate selected from the set G based on the relationship
formula within the total purchasing fund to determine a best
combination S of bid items in the set G under the bidding strategy
5   to output a list of bid items in the set G and the possible profit
obtained therefrom.

15.   The method according to claim 13, wherein the
logical formula represents a logical exclusive-OR of the
plurality of bid items,
10   the step (b) comprises the steps of:
                b.1) determining whether one of the plurality of
bid items is in bid;
                b.2) when an in-bid item exists, outputting the
in-bid item and a profit obtained from the in-bid item;
15   b.3) when no in-bit item exists, computing a profit
obtainable from each of bid items included in the relationship
formula; and
                b.4) determining a best bid item based on the profit
of each of bid items, the total purchasing fund, and the bidding
20   strategy to output the bid item and the profit obtained
therefrom.

16.   The method according to claim 13, wherein the
logical formula represents a logical AND of the plurality of

bid items, and the value table further containing an added value which will generate only when the plurality of bid items are all purchased,

the step (b) comprises the steps of:

5   b.1) producing a set G which is a sum of a first set including items each having a present price equal to or lower than the value thereof and a second set of bid items each being in bid;

b.2) determining whether a total of present prices

10   of bid items in the set G is not greater than the total purchasing fund;

b.3) when the total of present prices of the bid items in the set G is not greater than the total purchasing fund at the step (b.2), determining whether a total of present prices

15   of bid items included in the relationship formula is not greater than the total purchasing fund;

b.4) when the total of present prices of bid items included in the relationship formula is not greater than the total purchasing fund at the step (b.3), determining a best

20   combination S of bid items from all the bid items under the bidding strategy to output a list of bid items in the best combination S and the possible profit obtained therefrom;

b.5) when the total of present prices of bid items included in the relationship formula is greater than the total

25   purchasing fund at the step (b.3), determining a best combination

S of bid items from the set G under the bidding strategy to output

a list of bid items in the best combination S and the possible

profit obtained therefrom;

        b.6) when the total of present prices of the bid

5   items in the set G is greater than the total purchasing fund

at the step (b.2), computing a possible profit obtainable from

a combination candidate selected from the set G based on the

relationship formula within the total purchasing fund, taking

into consideration the added value, to determine a best

10 combination S of bid items in the set G under the bidding strategy

to output a list of bid items in the set S and the possible profit

obtained therefrom.

      17.   The method according to claim 13, wherein the

logical formula represents any combination of a logical OR, a

15 logical exclusive-OR, and a logical AND of the plurality of bid

items, wherein

the logical OR represents a desire to maximize the

possible profit within the total purchasing fund,

the logical exclusive-OR represents a desire to determine

20 a single bid item of the plurality of bid items so as to maximize

the possible profit within the total purchasing fund, and

the logical AND represents that an added value will

generate only when a plurality of bid items related to the logical

AND are all purchased,

the step (b) comprises the steps of:

b.1) producing 2^x possible states, where x is the number of all the items, wherein each of the possible states indicates that a bid item is to be purchased or not to be

5   purchased;

b.2) removing a possible state purchasing both items relating to the exclusive OR from the 2^x possible states to produce a set of possible states; and

b.3) computing a possible profit obtainable from

10   a combination candidate selected from the set G based on the relationship formula within the total purchasing fund, taking into consideration the added value, to determine a best combination S of bid items in the set G under the bidding strategy to output a list of bid items in the set S and the possible profit

15   obtained therefrom.

18.   The method according to claim 13, wherein a bidding strategy is established taking into consideration a possible rise of a bidding price of each of the bid items due to participation of a third party to the bidding in the future.

20   19.   An automatic bidding method comprising the steps of:

a) storing a logical formula representing a relationship among a plurality of bid items, a value table

containing a value of each of the bid items, price information

of each of the bid items in at least one market, a total purchasing

fund, and a bidding strategy:

        b) collecting price information of the bid items

5   from the market to update the price information stored at regular

intervals;

        c) determining at least on bid item for which a bid

should be made and a gross profit obtainable from the determined

at least one bid item, so as to maximize a possible profit

10   obtainable from a combination candidate selected from the

plurality of bid items based on the relationship formula within

the total purchasing fund;

        d) outputting a list of the determined at least one

bid item; and

15   e) automatically bidding based on the list of the

determined at least one bid item.

      20.   A bid supporting method comprising the steps of:

        a) storing a logical formula representing a

relationship among a plurality of bid items, a value table

20   containing a value of each of the bid items, price information

of each of the bid items in at least one market, a total purchasing

fund, and a bidding strategy;

        b) collecting price information of the bid items

from the market to update the price information stored at regular

intervals;

c) determining at least on bid item for which a bid

should be made and a gross profit obtainable from the determined

at least one bid item, so as to maximize a possible profit

5   obtainable from a combination candidate selected from the

plurality of bid items based on the relationship formula within

the total purchasing fund;

d) outputting a list of the determined at least one

bid item; and

10   e) representing the determined at least one bid item

as recommendable information reflecting price variations in the

market.

21.   The automated bidding method according to claim 19,

wherein the relationship formula, the value table, and the total

15   purchasing fund are allowed to be updated with a lapse of time.

22.   The bid supporting method according to claim 20,

wherein the relationship formula, the value table, and the total

purchasing fund are allowed to be updated with a lapse of time.

23.   The automated bidding method according to claim 19,

20   further comprising a mobile agent, wherein, after the

relationship formula, the value table, the total purchasing fund,

and the bidding strategy have been input, a whole system

implementing the automated bidding method is transferred from

a user's computer to a continuously operating computer to allow periodical market observation.

24.   The bid supporting method according to claim 20, further comprising a mobile agent, wherein, after the

5   relationship formula, the value table, the total purchasing fund, and the bidding strategy have been input, a whole system implementing the automated bidding method is transferred from a user's computer to a continuously operating computer to allow periodical market observation.

10   25.   A computer-readable recording medium storing a computer program for deciding a bid item for which a bid is made, the computer program comprising the steps of:

a) storing a logical formula representing a relationship among a plurality of bid items, a value table

15   containing a value of each of the bid items, price information of each of the bid items in at least one market, a total purchasing fund, and a bidding strategy; and

b) determining at least on bid item for which a bid should be made and a gross profit obtainable from the determined

20   at least one bid item, so as to maximize a possible profit obtainable from a combination candidate selected from the plurality of bid items based on the relationship formula within the total purchasing fund.

26.   A computer-readable recording medium storing a computer program for automatic bidding, the computer program comprising the steps of:

a) storing a logical formula representing a

5   relationship among a plurality of bid items, a value table containing a value of each of the bid items, price information of each of the bid items in at least one market, a total purchasing fund, and a bidding strategy:

b) collecting price information of the bid items

10   from the market to update the price information stored at regular intervals;

c) determining at least on bid item for which a bid should be made and a gross profit obtainable from the determined at least one bid item, so as to maximize a possible profit

15   obtainable from a combination candidate selected from the plurality of bid items based on the relationship formula within the total purchasing fund;

d) outputting a list of the determined at least one bid item; and

20   e) automatically bidding based on the list of the determined at least one bid item.

27.   A computer-readable recording medium storing a computer program for bid supporting method comprising the steps

of:

a) storing a logical formula representing a

relationship among a plurality of bid items, a value table

containing a value of each of the bid items, price information

5   of each of the bid items in at least one market, a total purchasing

fund, and a bidding strategy;

b) collecting price information of the bid items

from the market to update the price information stored at regular

intervals;

10   c) determining at least on bid item for which a bid

should be made and a gross profit obtainable from the determined

at least one bid item, so as to maximize a possible profit

obtainable from a combination candidate selected from the

plurality of bid items based on the relationship formula within

15   the total purchasing fund;

d) outputting a list of the determined at least one

bid item; and

e) representing the determined at least one bid item

as recommendable information reflecting price variations in the

20   market.

28.   A method for deciding a bid item for which a bid

is made, comprising the steps of:

a) storing a logical formula representing a logical

OR of two bid items X and Y, a value table containing values

xm and ym of respective ones of the bid items X and Y, present

prices x and y of respective ones of the bid items X and Y, a

total purchasing fund T, and a constant p1 determined by a bidding

strategy;

5   b) determining whether y < ym (hereafter, called

Condition 1) is satisfied;

         c) determining whether y < (T + ym - xm)/2 (hereafter,

called Condition 2) is satisfied;

         d) determining whether y - ym < x - xm (hereafter,

10   called Condition 3) is satisfied;

         e) determining whether close of bidding for Y is

earlier than that of X:

         f) determining whether x + y > T (hereafter, called

Condition 5) is satisfied:

15   g) determining whether y > p1*x - p1*xm + ym

(hereafter, called Condition 6) is satisfied:

         h) determining that the bid item Y should not be

purchased in one of cases where the Condition 1 is not satisfied,

where the Condition 1 is satisfied, the Conditions 2 and 3 are

20   not satisfied, and the Conditions 4 and 6 are satisfied, and

where the Condition 1 is satisfied, the Conditions 2-5 are not

satisfied, and the Condition 6 is satisfied: and

         i) determining that the bid item Y should be

purchased in one of cases where the Conditions 1 and 2 are

25   satisfied, where the Condition 1 is satisfied, the Condition

2 is not satisfied, and the Condition 3 is satisfied, where the

Condition 1 is satisfied, the Conditions 2 and 3 are not satisfied, the Condition 4 is satisfied, and the Condition 6 is not satisfied, and where the Condition 1 is satisfied and the Conditions 2-6 are not satisfied.

5   29.   A method for deciding a bid item for which a bid is made, comprising the steps of:

a) storing a logical formula representing a logical AND of two bid items X and Y, a value table containing values xm and ym of respective ones of the bid items X and Y, present

10   prices x and y of respective ones of the bid items X and Y, an added value xym obtainable when the items X and Y are both purchased, a total purchasing fund T, and a constant p2 determined by a bidding strategy;

b) determining whether $y < ym$ (hereafter, called

15   Condition 1) is satisfied;

c) determining whether $y > xym - xm$ (hereafter, called Condition 2) is satisfied;

d) determining whether $x + y > xym$ (hereafter, called Condition 3) is satisfied;

20   e) determining whether $y > p2*xym - p2*x + ym$ (hereafter, called Condition 4) is satisfied;

f) determining that the bid item Y should be purchased in one of cases where the Condition 1 is satisfied and where the Conditions 1-4 are not satisfied; and

25   g) determining that the bid item Y should not be

purchased when the Condition 1 is not satisfied and one of the
Conditions 2-4 is satisfied.